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Product Approval
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FL #	FL10626-R14																
Application Type	Revision																
Code Version	2017																
Application Status	Approved																
Comments																	
Archived	<input type="checkbox"/>																
Product Manufacturer	GAF																
Address/Phone/Email	1 Campus Drive Parsippany, NJ 07054 (800) 766-3411 mstieh@gaf.com																
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Quality Assurance Representative																	
Address/Phone/Email																	
Category	Roofing																
Subcategory	Underlayments																
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer <input type="checkbox"/> Evaluation Report - Hardcopy Received																
Florida Engineer or Architect Name who developed the Evaluation Report	Robert Nieminen																
Florida License	PE-59166																
Quality Assurance Entity	UL LLC																
Quality Assurance Contract Expiration Date	12/17/2021																
Validated By	John W. Knezevich, PE <input checked="" type="checkbox"/> Validation Checklist - Hardcopy Received																
Certificate of Independence	FL10626_R14_COI_2018_01_COI_NIEMINEN.pdf																
Referenced Standard and Year (of Standard)	<table border="0"> <thead> <tr> <th>Standard</th> <th>Year</th> </tr> </thead> <tbody> <tr> <td>ASTM D1970</td> <td>2015</td> </tr> <tr> <td>ASTM D226 (physicals)</td> <td>2009</td> </tr> <tr> <td>ASTM D4533 (tear)</td> <td>2015</td> </tr> <tr> <td>ASTM D6164</td> <td>2011</td> </tr> <tr> <td>ASTM D6757</td> <td>2016</td> </tr> <tr> <td>FM 4474</td> <td>2011</td> </tr> <tr> <td>FRSA/TRI April 2012 (04-12)</td> <td>2012</td> </tr> </tbody> </table>	Standard	Year	ASTM D1970	2015	ASTM D226 (physicals)	2009	ASTM D4533 (tear)	2015	ASTM D6164	2011	ASTM D6757	2016	FM 4474	2011	FRSA/TRI April 2012 (04-12)	2012
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FRSA/TRI April 2012 (04-12)	2012																
Equivalence of Product Standards Certified By																	

Sections from the Code

Product Approval Method	Method 1 Option D
Date Submitted	06/05/2018
Date Validated	06/16/2018
Date Pending FBC Approval	06/26/2018
Date Approved	08/15/2018

Summary of Products

FL #	Model, Number or Name	Description
10626.1	GAF Roof Underlayments	Roofing Underlayments for use in sloped roof systems
Limits of Use Approved for use in HVHZ: No Approved for use outside HVHZ: Yes Impact Resistant: N/A Design Pressure: +N/A/-442.5 Other: 1.) The design pressure noted in this application relates to one particular underlayment system for use under foam-on tile systems. Refer to ER Section 5.6.4 for details. 2.) Refer to ER Section 5 for other Limits of Use.		Installation Instructions FL10626 R14 II 2018 06 FINAL ER GAF UNDERLAYMENTS FL10626-R14.pdf Verified By: Robert Niemien 59166 Created by Independent Third Party: Yes Evaluation Reports FL10626 R14 AE 2018 06 FINAL ER GAF UNDERLAYMENTS FL10626-R14.pdf Created by Independent Third Party: Yes

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ENGINEER

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EVALUATION REPORT

GAF

1 Campus Drive
Parsippany, NJ 07054
(800) 766-3411

Evaluation Report 01506.04.08-R14

FL10626-R14

Date of Issuance: 04/25/2008

Revision 14: 06/06/2018

SCOPE:

This Evaluation Report is issued under **Rule 61G20-3** and the applicable rules and regulations governing the use of construction materials in the State of Florida. The documentation submitted has been reviewed by Robert Nieminen, P.E. for use of the product under the Florida Building Code and Florida Building Code, Residential Volume. The products described herein have been evaluated for compliance with the **6th Edition (2017) Florida Building Code** sections noted herein.

DESCRIPTION: GAF Roof Underlayments

LABELING: Labeling shall be in accordance with the requirements of the Accredited Quality Assurance Agency noted herein.

CONTINUED COMPLIANCE: This Evaluation Report is valid until the named product(s) changes, the referenced Quality Assurance documentation changes, or provisions of the Code that relate to the product change. Acceptance of this Evaluation Report by the named client constitutes agreement to notify Robert Nieminen, P.E. of any changes to the product(s), the Quality Assurance or the production facility location(s). NEMO|etc. requires a complete review of this Evaluation Report relative to updated Code requirements with each Code Cycle.

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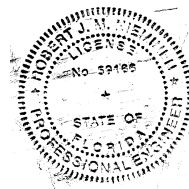
INSPECTION: Upon request, a copy of this entire Evaluation Report shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This Evaluation Report consists of pages 1 through 11.

Prepared by:

Robert J.M. Nieminen, P.E.

Florida Registration No. 59166, Florida DCA ANE1983



The facsimile seal appearing was authorized by Robert Nieminen, P.E. on 06/05/2018. This does not serve as an electronically signed document.

CERTIFICATION OF INDEPENDENCE:

1. NEMO ETC, LLC does not have, nor does it intend to acquire, or will it acquire, a financial interest in any company manufacturing or distributing products it evaluates.
2. NEMO ETC, LLC is not owned, operated or controlled by any company manufacturing or distributing products it evaluates.
3. Robert Nieminen, P.E. does not have nor will acquire, a financial interest in any company manufacturing or distributing products for which the evaluation reports are being issued.
4. Robert Nieminen, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.
5. This is a building code evaluation. Neither NEMO|etc. nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this Evaluation Report, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.

ROOFING COMPONENT EVALUATION:
1. SCOPE:

Product Category: Roofing
Sub-Category: Underlayment

Compliance Statement: **GAF Roof Underlayments**, as produced by **GAF**, have demonstrated compliance with the following sections of the Florida Building Code through testing in accordance with the following Standards. Compliance is subject to the Installation Requirements and Limitations / Conditions of Use set forth herein.

2. STANDARDS:

<u>Section</u>	<u>Property</u>	<u>Standard</u>	<u>Year</u>
1504.3.1	Wind Uplift	FM 4474	2011
1507.1.1, R905.1.1 Exception	Unrolling, Breaking Strength, Pliability	ASTM D226	2009
1507.1.1, R905.1.1 Exception	Tear Strength	ASTM D4533	2015
1507.2.3 / 1507.1.1	Physical Properties	ASTM D6757	2016
1507.2.4 / 1507.1.1, 1507.2.9.2	Physical Properties	ASTM D1970	2015
1507.3.3	Physical properties	FRSA/TRI April 2012 (04-12)	2012
1507.11.2	Physical Properties	ASTM D6164	2011

3. REFERENCES:

<u>Entity</u>	<u>Examination</u>	<u>Reference</u>	<u>Date</u>
ERD (TST 6049)	Physical Properties	R3360.02.07-2-R1	03/13/2007
ERD (TST 6049)	Physical Properties	G12110.12.08	12/02/2008
ERD (TST 6049)	FRSA/TRI April 2012 (Slippage)	G34150.08.11	11/14/2011
ERD (TST 6049)	ASTM D6164	G40630.01.14-2B	01/07/2014
ERD (TST 6049)	ASTM D6164	G46160.09.14-3A	09/09/2014
ERD (TST 6049)	ASTM D1970	GAF-SC13285.03.17-3	03/01/2017
ERD (TST 6049)	ASTM D1970	GAF-SC13285.03.17-4	03/01/2017
PRI (TST 5878)	Physical properties	BRY-003-02-01	03/19/2002
PRI (TST 5878)	ASTM D1970	GAF-026-02-01	03/26/2002
PRI (TST 5878)	ASTM D1970	GAF-027-02-01	03/26/2002
PRI (TST 5878)	Physical properties	GAF-042-02-01	06/03/2005
PRI (TST 5878)	Physical properties	GAF-224-02-01	07/27/2009
PRI (TST 5878)	ASTM D1970	GAF-238-02-01	03/03/2010
PRI (TST 5878)	ASTM D1970	GAF-275-02-01	11/11/2010
PRI (TST 5878)	Physical properties	GAF-349-02-01	07/03/2012
PRI (TST 5878)	Wind Uplift	GAF-434-02-01	09/16/2013
PRI (TST 5878)	Wind Uplift	GAF-434-02-03	09/16/2013
PRI (TST 5878)	Wind Uplift	GAF-434-02-04	09/16/2013
PRI (TST 5878)	FBC 1507.1.1 (Exception)	GAF-818-02-01	12/05/2017
PRI (TST 5878)	FBC 1507.1.1 (Exception)	GAF-826-02-01	06/04/2018
PRI (TST 5878)	FBC 1507.1.1 (Exception)	GAF-847-02-01	06/04/2018
UL (TST 1740)	Physical properties	02NK22569	06/04/2002
UL (TST 1740)	ASTM D6757	10NK11990	05/18/2011
Miami-Dade (CER 1592)	HVHZ compliance	16-1216.02	02/02/2017
Miami-Dade (CER 1592)	HVHZ compliance	18-0119.15	02/22/2018
ICC-ES (EVL2396)	IBC/IRC compliance	ESR-2053	07/01/2017
ICC-ES (EVL2396)	IBC/IRC compliance	ESR-2808	07/01/2017
ICC-ES (EVL2396)	IBC/IRC compliance	ESR-1322	01/01/2018
ICC-ES (EVL2396)	IBC/IRC compliance	ESR-3286	02/01/2018
UL, LLC (QUA 9625)	Quality Control	Inspect, File R10689 (BC)	06/27/2017
UL, LLC (QUA 9625)	Quality Control	Inspect, File R10689 (CA)	07/07/2017
UL, LLC. (QUA 9625)	Quality Control	Inspect, File R10689 (GA)	02/02/2018
UL, LLC. (QUA 9625)	Quality Control	Inspect, File R10689 (IN)	01/10/2018

Entity	Examination	Reference	Date
UL, LLC. (QUA 9625)	Quality Control	Inspect, File R10689 (NC)	03/14/2018
UL, LLC (QUA 9625)	Quality Control	Inspect, File R10689 (OK)	06/20/2017
UL, LLC (QUA 9625)	Quality Control	Inspect, File R10689 (ON, QC)	05/18/2018
UL, LLC (QUA 9625)	Quality Control	Inspect, File R10689 (SC)	06/16/2017
UL, LLC (QUA 9625)	Quality Control	Inspect, File R10689 (TX)	05/24/2016
UL, LLC (QUA 9625)	Quality Control	Inspect, File R10689 (INDIA)	04/13/2018
UL, LLC (QUA 9625)	Quality Control	Inspect, File R10689 (LA)	04/23/2018

4. PRODUCT DESCRIPTION:

4.1 **Self-Adhering Underlayments:**

- 4.1.1 **Liberty™ SBS Self-Adhering Base/Ply Sheet** is a smooth-surfaced, fiberglass-reinforced, self-adhering SBS modified bitumen roof underlayment; meets ASTM D1970.
- 4.1.2 **StormGuard® Film Surfaced Leak Barrier** is a film-surfaced, fiberglass-reinforced, self-adhering SBS modified bitumen roof underlayment; meets ASTM D1970. StormGuard® Film Surfaced Leak Barrier is also used as a secondary water barrier to seal roof decks.
- 4.1.3 **WeatherWatch® Mineral Surfaced Leak Barrier** is a mineral-surfaced, fiberglass-reinforced, self-adhering SBS modified bitumen roof underlayment; meets ASTM D1970. WeatherWatch® Mineral Surfaced Leak Barrier is also used as a secondary water barrier to seal roof decks.

4.2 **Mechanically Fastened Underlayments:**

- 4.2.1 **VersaShield® Fire-Resistant Roof Deck Protection** is a non-asphaltic, fiberglass-based roof underlayment and/or fire barrier; meets physical requirements of ASTM D6757.
- 4.2.2 **Deck-Armor™ Premium Breathable Roof Deck Protection** is a non-woven, spun-bonded polypropylene laminated polyethylene scrim sheet roof underlayment, available in 48-inch or 54-inch roll widths; meets FBC 1507.1.1 & R905.1.1 (Exception).
- 4.2.3 **RoofPro™ SBS-Modified All-Purpose Underlayment** is a fiberglass-reinforced, SBS modified bitumen roof underlayment; meets AC165.
- 4.2.4 **Shingle-Mate® Roof Deck Protection** is a fiberglass reinforced, asphaltic roof underlayment; meets FBC 1507.1.1 & R905.1.1 (Exception).
- 4.2.5 **StormSafe™ Anchor Sheet** is a polypropylene woven fabric which serves as an anchor sheet in two-ply roof underlayment systems; meets FBC 1507.1.1 & R905.1.1 (Exception).
- 4.2.6 **Tiger Paw™ Roof Deck Protection** is a non-woven, polypropylene reinforced, polymer coated roof underlayment; meets FBC 1507.1.1 & R905.1.1 (Exception).

4.3 **Asphalt-Applied Underlayments:**

- 4.3.1 **Ruberoid® Mop Granule** is a granule-surfaced, polyester-reinforced, asphalt-applied SBS modified bitumen roof underlayment; meets ASTM D6164.
- 4.3.2 **Ruberoid® Mop Granule FR** is a granule-surfaced, polyester-reinforced, asphalt-applied SBS modified bitumen roof underlayment; meets ASTM D6164.

5. LIMITATIONS:

- 5.1 This is a building code evaluation. Neither NEMO ETC, LLC nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this Evaluation Report, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.
- 5.2 This Evaluation Report is not for use in FBC HVHZ jurisdictions.
- 5.3 Fire Classification is not part of this Evaluation Report; refer to current Approved Roofing Materials Directory or test report from accredited testing agency for fire ratings of this product.
- 5.4 **GAF Roof Underlayments** may be used with any prepared roof cover where the product is specifically referenced within FBC approval documents. If not listed, a request may be made to the Authority Having Jurisdiction for approval based on this evaluation combined with supporting data for the prepared roof covering.
- 5.5 Allowable Roof Covers:

TABLE 1: ROOF COVER OPTIONS						
Underlayment	Asphalt Shingles	Nail-On Tile	Foam-On Tile	Metal	Wood Shakes & Shingles	Slate or Simulated Slate
Deck-Armor™ Premium Breathable Roof Deck Protection	Yes	No	No	Contact GAF	Contact GAF	Contact GAF
RoofPro™ SBS-Modified All-Purpose Underlayment	Yes	No	No	No	Yes	Yes
Shingle-Mate® Roof Deck Protection	Yes	No	No	No	No	No
Tiger Paw™ Roof Deck Protection	Yes	No	No	Contact GAF	Contact GAF	Contact GAF
VersaShield® Fire-Resistant Roof Deck Protection	Yes	No	No	No	No	No
Liberty™ SBS Self-Adhering Base/Ply Sheet	Yes	No	No	No	No	No
StormGuard® Film Surfaced Leak Barrier	Yes	No	No	Yes	No	No
WeatherWatch® Mineral Surfaced Leak Barrier	Yes	No	No	No	No	No
Ruberoid® Mop Granule	Yes	Yes	Yes See 5.5.1	No	Yes	Yes
Ruberoid® Mop Granule FR	Yes	Yes	Yes See 5.5.1	No	Yes	Yes

- 5.5.1 “Foam-On Tile” is limited to use of the following Approved tile adhesives / underlayment combinations.

TABLE 1A: ALLOWABLE TILE ADHESIVE / UNDERLAYMENT COMBINATIONS ¹		
Adhesive	Florida Product Approval	Underlayments
Dow TileBond™	FL22525	Ruberoid® Mop Granule; Ruberoid® Mop Granule FR

¹ Refer to Tile Manufacturer’s or Adhesive Manufacturer’s Florida Product Approval for Overturning Moment Resistance Performance.

5.6 Allowable Substrates:

5.6.1 Direct-Bond to Deck:

- ✓ Liberty™ SBS Self-Adhering Base/Ply Sheet; StormGuard® Film Surfaced Leak Barrier and Weather Watch® Mineral Surfaced Leak Barrier self-adhered to new untreated plywood or existing untreated ASTM D41 primed plywood.
- ✓ Ruberoid® Mop Granule and Ruberoid® Mop Granule FR in hot asphalt to ASTM D41 primed structural concrete.

5.6.2 Bond to Mechanically Attached Base Layer:

- ✓ Liberty™ SBS Self-Adhering Base/Ply Sheet; StormGuard® Film Surfaced Leak Barrier and WeatherWatch® Mineral Surfaced Leak Barrier self-adhered to ASTM D226, Type II felt
- ✓ Ruberoid® Mop Granule and Ruberoid® Mop Granule FR in hot asphalt to GAFGLAS® #80 Ultima™ Base Sheet or Ruberoid® 20 Smooth.

5.6.3 Bond to Other Substrate Types:

- ✓ ASTM D41 primed metal (flashing metal, valley metal, etc.)

5.6.4 Wind Resistance for Underlayment Systems in Foam-On Tile Applications:

FRSA/TRI April 2012 (04-12) does not address wind uplift resistance of all underlayment systems beneath foam-on or mortar-set tile systems, where the underlayment forms part of the load-path. The following wind uplift limitations apply to underlayment systems that are not addressed in **FRSA/TRI April 2012 (04-12)** and are used in foam-on or mortar-set tile applications. Maximum Design Pressure is the result of testing for wind load resistance based on allowable wind loads and reflects the ultimate passing pressure divided by 2 (the 2 to 1 margin of safety per **FBC 1504.9** has already been applied). Refer to **FRSA/TRI April 2012 (04-12), Appendix A, Table 1A** or **FBC 1609** for determination of design wind loads.

#1 Maximum Design Pressure = -45 psf.

- Deck: Min. 19/32-inch plywood to meet project requirements to satisfaction of Authority Having Jurisdiction.
- Base Layer: GAFGLAS® #80 Ultima™ Base Sheet or Ruberoid® 20 Smooth mechanically attached with 12 ga., min. 1.25-inch long ring shank nails through 32 ga., 1-5/8-inch diameter tin caps spaced 9-inch o.c. at the 4-inch wide side laps and 9-inch o.c. at two (2), equally spaced, staggered center in the field of the sheet.
- Top Layer: Ruberoid® Mop Granule or Ruberoid® Mop Granule FR applied in full mopping of ASTM D312, Type IV hot asphalt at 20 to 25 lbs/square.

#2 Maximum Design Pressure = -75 psf.

- Deck: Min. 19/32-inch plywood to meet project requirements to satisfaction of Authority Having Jurisdiction.
- Base Layer: GAFGLAS® #80 Ultima™ Base Sheet or Ruberoid® 20 Smooth mechanically attached with 12 ga., min. 1.25-inch long ring shank nails through 32 ga., 1-5/8-inch diameter tin caps spaced 8-inch o.c. at the 4-inch wide side laps and 8-inch o.c. at three (3), equally spaced, staggered center in the field of the sheet.
- Top Layer: Ruberoid® Mop Granule or Ruberoid® Mop Granule FR applied in full mopping of ASTM D312, Type IV hot asphalt at 20 to 25 lbs/square.

#3 Maximum Design Pressure = -442.5 psf.

- Deck: Min. 2,500 psi structural concrete to meet project requirements to satisfaction of Authority Having Jurisdiction
- Base Layer: GAFGLAS #75 Base Sheet, Tri-Ply #75 Base Sheet, GAFGLAS #80 Ultima Base Sheet, GAFGLAS Ply 4, Tri-Ply Ply 4 or GAFGLAS Flex Ply 6 applied in full mopping of ASTM D312, Type IV hot asphalt at 20 to 25 lbs/square.
- Top Layer: Ruberoid® Mop Granule or Ruberoid® Mop Granule FR applied in full mopping of ASTM D312, Type IV hot asphalt at 20 to 25 lbs/square.

5.6.4.1 For mechanically attached Base Sheet, the maximum design pressure for the selected assembly shall meet or exceed that required under **FRSA/TRI April 2012 (04-12), Appendix A, Table 1A**.

Alternatively, the maximum design pressure for the selected assembly shall meet or exceed the Zone 1 design pressure determined in accordance with **FBC 1609**. In this case, Zones 2 and 3 shall employ an attachment density designed by a qualified design professional to resist the elevated pressure criteria. Commonly used methods are **ANSI/SPRI WD1, FM Loss Prevention Data Sheet 1-29 and Roofing Application Standard RAS 117**. Assemblies marked with an asterisk* carry the limitations set forth in Section 2.2.10.1 of **FM Loss Prevention Data Sheet 1-29 (January 2016)** for Zone 2/3 enhancements.

5.7 Exposure Limitations:

5.7.1 Deck-Armor™ Premium Breathable Roof Deck Protection; RoofPro™ SBS-Modified All-Purpose Underlayment; Shingle-Mate® Roof Deck Protection; StormSafe™ Anchor Sheet and Tiger Paw™ Roof Deck Protection shall not be left exposed for longer than **30-days** after installation.

5.7.2 VersaShield® Fire-Resistant Roof Deck Protection, Ruberoid® Mop Granule and Ruberoid® Mop Granule FR shall not be left exposed for longer than **180-days** after installation.

5.7.3 Liberty™ SBS Self-Adhering Base/Ply Sheet; StormGuard® Film Surfaced Leak Barrier and WeatherWatch® Mineral Surfaced Leak Barrier shall not be left exposed for longer than **30-days** after installation.

5.8 Tile Slippage Limitations (TAS 103 per FRSA/TRI April 2012 (04-12)):

When loading roof tiles on the underlayment in direct-deck tile assemblies, the maximum roof slope shall be as follows. These slope limitations can only be exceeded by using battens during loading of the roof tiles.

TABLE 2: TILE SLIPPAGE LIMITATIONS FOR DIRECT-DECK TILE INSTALLATIONS			
Underlayment	Tile Profile	Staging Method	Maximum Slope
Ruberoid® Mop Granule	Flat	Max. 10-tile stack	4:12
	Flat	Max. 6-tile stack (4 over 2)	5:12
	Lugged	Max. 10-tile stack	5:12
Ruberoid® Mop Granule FR	Flat or Lugged	Max. 6-tile stack (4 over 2)	5:12
	Lugged	Max. 10-tile stack	4:12

6. INSTALLATION:

6.1 **GAF Roof Underlayments** shall be installed in accordance with **GAF** published installation instructions subject to the Limitations set forth in Section 5 herein and the specifics noted below.

6.2 Re-fasten any loose decking panels, and check for protruding nail heads. Sweep the substrate thoroughly to remove any dust and debris prior to application and prime the substrate (if applicable).

6.3 Install self-adhering underlayments when ambient temperatures are minimum 45°F and rising.

6.4 All metal surfaces shall be primed with **Matrix™ 307 Premium Asphalt Primer** or alternate **GAF** accepted **ASTM D41** primer prior to application of self-adhering membranes.

6.5 Deck-Armor™ Premium Breathable Roof Deck Protection:

6.5.1 Shall be installed in compliance with the requirements for ASTM D226, Type I or II underlayment in **FBC Table 1507.1.1 or R905.1.1** for the type of prepared roof covering to be installed, considering the wider sheet-width for double-layer applications.

6.5.2 Minimum fasteners shall be 1-inch diameter plastic-capped corrosion resistant nails or 1-inch diameter plastic-capped, corrosion resistant staples.

Code Reference: The Exception statement in FBC 1507.1.1 and FBC R905.1.1 requires use of metal cap nails where the ultimate design wind speed, V_{ult} , equals or exceeds 150 mph.

6.5.3 Optional, or if required by the Authority Having Jurisdiction: Install a leak barrier of Liberty™ SBS Self-Adhering Base/Ply Sheet; StormGuard® Film Surfaced Leak Barrier; ~~UnderRoof™ 2 Polyester Surfaced Leak Barrier~~ or WeatherWatch® Mineral Surfaced Leak Barrier at vulnerable leak areas, including but not limited to eaves, valleys, rakes, skylights and dormers. At eaves and valleys, install the leak barrier prior to installation of the underlayment. Along the rake, install the underlayment, leaving 6 to 8-inch of the deck exposed, and then install the leak barrier over the underlayment and exposed decking. At other areas, install the leak barrier over the underlayment.

6.5.4 Non-Tile Roof Installations:

Single Layer; Roof Slope > 4:12:

Starting at the eave, fasten the eave edge and 6-inch wide end-laps 6-inch o.c. Fasten in the field of the roll 12-inch o.c. in two, equally spaced, staggered center rows.

Continue upslope in a similar manner, maintaining minimum 3-inch side-laps and minimum 6-inch end-laps. Fasten 6-inch o.c. in the laps and 12-inch o.c. in two, equally spaced, staggered center rows in the field. Ensure all end laps are staggered at least 3-feet apart.

Double Layer; 2:12 < Roof Slope < 4:12:

If leak barrier (6.3.3) is not used, install a half-width sheet at the eave prior to subsequent courses. Starting at the eave, fasten the eave edge and 6-inch wide end-laps 6-inch o.c. Fasten in the field of the roll 12-inch o.c. in two, equally spaced, staggered center rows.

Continue upslope in a similar manner, with minimum 25.5-inch side-laps for 48-inch wide rolls (resulting in maximum 22.5-inch exposure) or minimum 28.5-inch side-laps for 54-inch wide rolls (resulting in maximum 25.5-inch exposure) and minimum 6-inch end-laps. Fasten 6-inch o.c. along the low edge and end laps and 12-inch o.c. in two, equally spaced, staggered center rows in the field. Ensure all end laps are staggered at least 3-feet apart.

6.6 Tiger Paw™ Roof Deck Protection:

6.6.1 Shall be installed in compliance with the requirements for ASTM D226, Type I or II underlayment in **FBC Table 1507.1.1 or R905.1.1** for the type of prepared roof covering to be installed, considering the wider sheet-width for double-layer applications.

6.6.2 Minimum fasteners shall be 1-inch diameter plastic-capped corrosion resistant nails or 1-inch diameter plastic-capped, corrosion resistant staples.

Code Reference: The Exception statement in FBC 1507.1.1 and FBC R905.1.1 requires use of metal cap nails where the ultimate design wind speed, V_{ult} , equals or exceeds 150 mph.

6.6.3 Optional, or if required by the Authority Having Jurisdiction: Install a leak barrier of Liberty™ SBS Self-Adhering Base/Ply Sheet; StormGuard® Film Surfaced Leak Barrier; ~~UnderRoof™ 2 Polyester Surfaced Leak Barrier~~ or WeatherWatch® Mineral Surfaced Leak Barrier at vulnerable leak areas, including but not limited to eaves, valleys, rakes, skylights and dormers. At eaves and valleys, install the leak barrier prior to installation of the underlayment. Along the rake, install the underlayment, leaving 6 to 8-inch of the deck exposed, and then install the leak barrier over the underlayment and exposed decking. At other areas, install the leak barrier over the underlayment.

6.6.4 Non-Tile Roof Installations:

Single Layer; Roof Slope > 4:12:

Starting at the eave, fasten the eave edge and 6-inch wide end-laps 6-inch o.c. Fasten in the field of the roll 12-inch o.c. in two, equally spaced, staggered center rows.

Continue upslope in a similar manner, maintaining minimum 3-inch side-laps and minimum 6-inch end-laps. Fasten 6-inch o.c. in the laps and 12-inch o.c. in two, equally spaced, staggered center rows in the field. Ensure all end laps are staggered at least 3-feet apart.

Double Layer; 2:12 < Roof Slope < 4:12:

If leak barrier (6.4.3) is not used, install a half-width sheet at the eave prior to subsequent courses. Starting at the eave, fasten the eave edge and 6-inch wide end-laps 6-inch o.c. Fasten in the field of the roll 12-inch o.c. in two, equally spaced, staggered center rows.

Continue upslope in a similar manner, with minimum 25.5-inch side-laps (resulting in maximum 22.5-inch exposure) and minimum 6-inch end-laps. Fasten 6-inch o.c. along the low edge and end laps and 12-inch o.c. in two, equally spaced, staggered center rows in the field. Ensure all end laps are staggered at least 3-feet apart.

6.7 StormSafe™ Anchor Sheet:

- 6.7.1 StormSafe™ Anchor Sheet is limited to use as a mechanically attached base layer in 2-ply underlayment systems.
- 6.7.2 Minimum fasteners shall be 1-inch diameter plastic- or steel-capped corrosion resistant nails; corrosion-resistant nails & 1-5/8-inch tin-caps; or Drill-Tec screws and plates.
Code Reference: The Exception statement in FBC 1507.1.1 and FBC R905.1.1 requires use of metal cap nails where the ultimate design wind speed, V_{ult} , equals or exceeds 150 mph.

6.7.3 Non-Tile Roof Installations:

Starting at the eave, fasten the eave edge and 6-inch wide end-laps 6-inch o.c. Fasten in the field of the roll 12-inch o.c. in two, equally spaced, staggered center rows.

Continue upslope in a similar manner, maintaining minimum 3-inch side-laps and minimum 6-inch end-laps. Fasten 6-inch o.c. in the laps and 12-inch o.c. in two, equally spaced, staggered center rows in the field. Ensure all end laps are staggered at least 3-feet apart.

One the same day, install Liberty™ SBS Self-Adhering Base/Ply; StormGuard® Film Surfaced Leak Barrier or WeatherWatch® Mineral Surfaced Leak Barrier over the StormSafe™ Anchor Sheet.

6.8 RoofPro™ SBS-Modified All-Purpose Underlayment and Shingle-Mate® Roof Deck Protection:

- 6.8.1 Shall be installed in compliance with the requirements for ASTM D226, Type I or II underlayment in **FBC Table 1507.1.1 or R905.1.1** for the type of prepared roof covering to be installed. No hammer tacks or staples are permitted.
Code Reference: The Exception statement in FBC 1507.1.1 and FBC R905.1.1 requires use of metal cap nails where the ultimate design wind speed, V_{ult} , equals or exceeds 150 mph.
- 6.8.2 Optional, or if required by the Authority Having Jurisdiction: Install a leak barrier of Liberty™ SBS Self-Adhering Base/Ply Sheet; StormGuard® Film Surfaced Leak Barrier or WeatherWatch® Mineral Surfaced Leak Barrier at vulnerable leak areas, including but not limited to eaves, valleys, rakes, skylights and dormers. At eaves and valleys, install the leak barrier prior to installation of the underlayment. Along the rake, install the underlayment, leaving 6 to 8-inch of the deck exposed, and then install the leak barrier over the underlayment and exposed decking. At other areas, install the leak barrier over the underlayment.

6.9 VersaShield® Fire-Resistant Roof Deck Protection:

- 6.9.1 Shall be installed in compliance with the codified requirements for **ASTM D6757** underlayment in **FBC Table 1507.1.1** for the type of prepared roof covering to be installed. No hammer tacks or staples are permitted.
- 6.9.2 Optional, or if required by the Authority Having Jurisdiction: Install a leak barrier of **Liberty™ SBS Self-Adhering Base/Ply Sheet; StormGuard® Film Surfaced Leak Barrier or WeatherWatch® Mineral Surfaced** at vulnerable leak areas, including but not limited to eaves, valleys, rakes, skylights and dormers. At eaves and valleys, install the leak barrier prior to installation of the underlayment. Along the rake, install the underlayment, leaving 6 to 8-inch of the deck exposed, and then install the leak barrier over the underlayment and exposed decking. At other areas, install the leak barrier over the underlayment.

6.10 Liberty™ SBS Self-Adhering Base/Ply Sheet:

6.10.1 Shall be installed in compliance with the codified requirements for **ASTM D1970** underlayment in **FBC Table 1507.1.1** for the type of prepared roof covering to be installed.

6.10.2 The minimum and maximum roof slopes are ½:12 and 6:12, respectively. Back-nailing is required when slope is 1:12 or greater. Back-nailing shall consist of minimum 1-inch square or round cap nails spaced 18" o.c. within 3-inch side laps.

6.10.3 Non-Tile Applications:

Shall be fully self-adhered to the substrates noted in **Section 5.6**. For direct-bond to deck applications plywood shall be primed with **Matrix™ 307 Premium Asphalt Primer** or alternate **GAF** accepted **ASTM D41** primer at ½ to ¾ gallon per square.

Prior to removal of release film, align sheets properly starting at the low-point of the roof (eave) with the selvage edge upslope and for minimum 2-inch overhang at eaves and rakes. Roll out sheet and allow to 'relax' for min. 30 minutes. Remove the lower piece of release film and bond to substrate and fold the overhanging 2-inch over the eave and nail into place 12" o.c. Remove the top piece of release film and bond to substrate. Install primed drip edge and fasten to meet **FBC Chapter 16** wind load requirements. Install 1/8-inch troweling of **Matrix™ 201 Premium SBS Flashing Cement** over drip edge.

Continue upslope in a similar manner, maintaining minimum 3-inch side-laps and minimum 6-inch end-laps. Ensure all end laps are staggered at least 18-inch apart.

Use a weighted lawn or linoleum roller to ensure complete adhesion to the substrate. Use a hand roller to firmly bond side and end laps.

6.11 StormGuard® Film Surfaced Leak Barrier:

6.11.1 Shall be installed in compliance with the codified requirements for **ASTM D1970** underlayment in **FBC Table 1507.1.1** for the type of prepared roof covering to be installed.

6.11.2 Back-nailing is required. Back-nailing shall consist of minimum 1-inch square or round cap nails spaced 18" o.c. within 3-inch side laps.

6.11.3 Non-Tile Applications:

Shall be fully self-adhered to the substrates noted in **Section 5.6**. Prior to removal of release film, align sheets properly starting at the low-point of the roof (eave) with the selvage edge upslope and for minimum 2-inch overhang at eaves and rakes. Remove the lower piece of release film and bond to substrate and fold the overhanging 2-inch over the eave and nail into place 12" o.c. Remove the top piece of release film and bond to substrate. Install primed drip edge and fasten to meet **FBC Chapter 16** wind load requirements. Install 1/8-inch troweling of **Matrix™ 201 Premium SBS Flashing Cement** over drip edge.

Continue upslope in a similar manner, maintaining minimum 3-inch side-laps and minimum 6-inch end-laps. Ensure all end laps are staggered at least 18-inch apart.

Use a hand roller to firmly bond side and end laps.

6.12 WeatherWatch® Mineral Surfaced Leak Barrier:

6.12.1 Shall be installed in compliance with the codified requirements for **ASTM D1970** underlayment in **FBC Table 1507.1.1** for the type of prepared roof covering to be installed.

6.12.2 **WeatherWatch® Mineral Surfaced Leak Barrier** may be installed as a secondary water barrier using minimum 4-inch wide rolls to seal plywood deck joints prior to installation of the primary underlayment system.

6.12.3 Back-nailing is required. Back-nailing shall consist of minimum 1-inch square or round cap nails spaced 18" o.c. within 4-inch side laps.

6.12.4 Non-Tile Applications:

Shall be fully self-adhered to the substrates noted in **Section 5.6**. Prior to removal of release film, align sheets properly starting at the low-point of the roof (eave) with the selvage edge upslope and for minimum 2-inch overhang at eaves and rakes. Remove the lower piece of release film and bond to substrate and fold the overhanging 2-inch over the eave and nail into place 12" o.c. Remove the top piece of release film and bond to substrate. Install primed drip edge and fasten to meet **FBC Chapter 16** wind load requirements. Install 1/8-inch troweling of **Matrix™ 201 Premium SBS Flashing Cement** over drip edge.

Continue upslope in a similar manner, maintaining minimum 3-inch side-laps and minimum 6-inch end-laps. Ensure all end laps are staggered at least 18-feet apart.

Use a hand roller to firmly bond side and end laps.

6.13 Ruberoid® Mop Granule; Ruberoid® Mop Granule FR:

6.13.1 **Ruberoid® Mop Granule** or **Ruberoid® Mop Granule FR** shall be installed in compliance with current **GAF** published installation requirements.

6.13.2 For use in tile applications, **Ruberoid® Mop Granule** or **Ruberoid® Mop Granule FR** are for use as an alternate to "Mineral Surface Roll Roofing" (ASTM D6380, Class M) in the "Single Ply System" from **FRSA/TRI April 2012 (04-12)** beneath mechanically fastened tile roof systems or the Hot Asphalt applied "Cap Sheet" in the "Two Ply System" from **FRSA/TRI April 2012 (04-12)** beneath mechanically fastened or adhered tile roof systems.

6.13.3 Fully adhere in **ASTM D312**, Type IV hot-asphalt to the substrates noted in **Section 5.6**. Side laps shall be minimum 4-inch and end-laps minimum 6-inch wide, and offset end-laps minimum 3-feet from course to course. Side and end-laps shall be fully adhered in a complete mopping of hot asphalt with asphalt extending approximately 3/8-inch beyond the lap edge.

6.13.4 Consult **GAF** instructions regarding back-nailing requirements.

6.14 Tile Staging (Ruberoid® Mop Granule; Ruberoid® Mop Granule FR):

6.14.1 Tile shall be loaded and staged in a manner that prevents tile slippage and/or damage to the underlayment. Refer to **Table 2** herein, and **GAF** published requirements for tile staging.

6.14.2 Battens and/or Counter-battens, as required by the tile manufacturer and **FRSA/TRI April 2012 (04-12)** must be used on all roof slopes greater than 7:12. Precautions should be taken as needed, such as the use of battens or nail-boards, to prevent tile sliding and/or damage to the underlayment during the loading process.

7. BUILDING PERMIT REQUIREMENTS:

As required by the Building Official or Authority Having Jurisdiction to properly evaluate the installation of this product.

8. MANUFACTURING PLANTS:

Contact the noted QA agency for information on product locations covered for **F.A.C. 61G20-3** QA requirements. The following plants have qualified products under their respective physical properties specifications.

<u>Plant</u>	<u>Specification</u>	<u>Product(s)</u>
Charleston, SC	FBC 1507.1.1 (Exception)	Tiger Paw™ Roof Deck Protection
Conover, NC	ASTM D6757	VersaShield® Fire-Resistant Roof Deck Protection
Dadra, India	FBC 1507.1.1 (Exception)	Tiger Paw™ Roof Deck Protection
Fontana, CA	AC165	RoofPro™ SBS-Modified All-Purpose Underlayment
Homer, LA	FBC 1507.1.1 (Exception)	Tiger Paw™ Roof Deck Protection (WIP)
McGregor, TX	FBC 1507.1.1 (Exception)	Shingle-Mate® Roof Deck Protection
Mission, BC	FBC 1507.1.1 (Exception)	Tiger Paw™ Roof Deck Protection
Mt. Vernon, IN	ASTM D1970	Liberty™ SBS Self-Adhering Base/Ply Sheet; StormGuard® Film Surfaced Leak Barrier; WeatherWatch® Mineral Surfaced Leak Barrier
North Bay, Ontario	FBC 1507.1.1 (Exception)	Deck-Armor™ Premium Breathable Roof Deck Protection, StormSafe™ Anchor Sheet, Tiger Paw™ Roof Deck Protection (conversion)
Pryor, OK	FBC 1507.1.1 (Exception)	Shingle-Mate® Roof Deck Protection
Savannah, GA	ASTM D1970	StormGuard® Film Surfaced Leak Barrier; WeatherWatch® Mineral Surfaced Leak Barrier
	ASTM D6164	Ruberoid® Mop Granule; Ruberoid® Mop Granule FR

9. QUALITY ASSURANCE ENTITY:

UL, LLC. – QUA9625; (847) 664-3281

- END OF EVALUATION REPORT -